

Case 7201

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : February 14, 2002
Munehiro MOROKUMA et al. :
Serial No.: N/A :
Filed: Herewith :
For: SEPARATOR FOR SOLID ELECTROLYTE:
CONDENSER AND SOLID ELECTROLYTE:
CONDENSER USING THE SAME :

PRELIMINARY AMENDMENT

Honorable Commissioner of Patents
and Trademarks
Washington, D.C. 20231

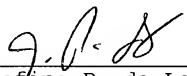
Dear Sir:

Applicants have amended the above-identified application as follows:

IN THE CLAIMS:

Applicants have amended the claims to remove multiple dependencies and to reformat the claims. Applicants have also added new claims. A marked-up version of the claims showing the changes made is attached herewith.

Respectfully submitted,



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Marked-up version of the claims showing the changes made.

What is claimed is: We claim:

1. (Amended) A separator for a solid electrolyte condenser ~~which comprises an anode foil, a cathode foil, said separator between said anode foil and said cathode foil, and said solid electrolyte provided between said anode foil and said cathode foil,~~ comprising wherein:

~~said separator is~~ a nonwoven fabric containing which contains polyester resin or its derivative; and

a diameter of fiber of said nonwoven fabric is 0.01 to 3 dtex.

2. The separator according to claim 1, wherein said nonwoven fabric contains said polyester resin of polyethyleneterephthalate family containing carboxyalkoxybenzenesulfonic acid and its derivatives as a copolymerization ingredient.

3. The separator according to claim 2, wherein said carboxyalkoxybenzenesulfonic and its derivatives are 3,5-dicarboxymethoxybenzenesulfonic acid and its derivatives.

4. The separator according to claim 1, wherein said nonwoven fabric contains said polyester resin of polyetheneterephthalate family containing alkylglycol and its derivatives as a copolymerization ingredient.

5. The separator according to claim 4, wherein said alkylglycol and its derivatives are diethyleneglycol and its derivatives.

6. (Amended) The separator according to ~~one of claim 2, 3, 4, or 5~~ claim 1, wherein said nonwoven fabric contains:

~~said polyester resin of polyethyleneterephthalate family containing carboxyalkoxybenzenesulfonic acid and its~~

derivatives as a copolymerization ingredient; and

said polyester resin of polyethyleneterephthalate family containing alkylglycol and its derivatives as a copolymerization ingredient.

7. The separator according to claim 6, wherein a concentration of said polyester resin of polyethylenephthalate family containing carboxyalkoxybenzenesulfonic acid and its derivatives as a copolymerization ingredient is greater than or equal to 50 weight %.

8. (Amended) The separator according to ~~one of claim 1, 2, 3, 4, 5, 6, or 7~~ claim 1, wherein:

a thickness of said separator is in a range of 20 to 100 μm ; and

a density of said separator is in a range of 0.30 to 0.70 g/cm^3 .

9. (Amended) A solid electrolyte condenser ~~which comprises,~~ comprising:

an anode foil_[i]

a cathode foil_[i]

a separator between said anode foil and said cathode foil_[i]

~~and~~ solid electrolyte between said anode foil and said cathode foil_[i], ~~wherein:~~

a surface of said anode foil is etched and insulating oxide film is formed on said surface;

a surface of said cathode foil is at least etched;

said separator ~~according to one of claim 1, 2, 3, 4, 5, 6, 7, 8~~ is sandwiched sandwiched between said anode foil and said cathode foil and is rolled together with said anode foil

and said cathode foil to form a condenser element; and

said solid electrolyte is provided between said anode foil and said cathode foil.

10. (Amended) The solid electrolyte condenser according to claim 9, wherein said solid electrolyte is a conductive polymer containing at least one material selected from among tetracyanoquinodimethanecomplex salt and its derivatives, polypyrrole and its derivatives, polyaniline and its derivatives, polythiophene and its derivatives, polyethelenedioxythiophene and its derivatives, polyethelenedioxyphenethiophenepolystyrenesulfonate and its derivatives.

11. (Amended) The solid electrolyte condenser according to claim 10, wherein said conductive polymer contains at least one binder ingredient selected from among polyvinylalcohol, polyvinylacetate, polycarbonate, polyacrylate, polymethacrylate, polystyrene, polyurethane, polyacrylonitrile, polybutadiene, polyisoprene, polyether, a plurality of polyesters, polyamide, ~~polyimide~~, butylal resin, silicone resin, malamine resin, alkyld resin, cellulose, nitrocellulose, a plurality of epoxy resins, and all of their derivatives.

12. (Amended) The solid electrolyte condenser according to claim 11, wherein said plurality of polyesters are selected from among polyethyleneterephthalate, carbonyl modified polyethyleneterephthalate, sulfonic acid modified polyethyleneterephthalate, polybutyleneterephthalate, carbonyl modified polyethyleneterephthalate, sulfonic acid modidified polybutyleneterephthalate.

13. (Amended) The solid electrolyte condenser according to claim 11, wherein said plurality of epoxy resins are selected from among bisphenol A type epoxy, bisphenol F type epoxy, alicycliceoxy, nitrile rubber modified epoxy.

14. (New) The solid electrolyte condenser according to claim 9, wherein:

said separator is a nonwoven fabric containing polyester resin or its derivative; and

a diameter of fiber of said nonwoven fabric is 0.01 to 3 dtex.

15. (New) The solid electrolyte condenser according to claim 9, wherein said nonwoven fabric contains said polyester resin of polyethyleneterephthalate family containing carboxyalkoxybenzenesulfonic acid and its derivatives as a copolymerization ingredient.

16. (New) The solid electrolyte condenser according to claim 15, wherein said carboxyalkoxybenzenesulfonic and its derivatives are 3,5-dicarboxymethoxybenzenesulfonic acid and its derivatives.

17. (New) The solid electrolyte condenser according to claim 9, wherein said nonwoven fabric contains said polyester resin of polyetheneterphthalate family containing alkylglycol and its derivatives as a copolymerization ingredient.

18. (New) The solid electrolyte condenser according to claim 17, wherein said alkylglycol and its derivatives are diethyleneglycol and its derivatives.

19. (New) The solid electrolyte condenser according to claim 9, wherein said nonwoven fabric contains:

polyester resin of polyethyleneterephthalate family

containing carboxyalkoxybenzenesulfonic acid and its derivatives as a copolymerization ingredient; and

polyester resin of polythyleneterephthalate family containing alkylglycol and its derivatives as a copolymerization ingredient.

20. (New) The solid electrolyte condenser according to claim 19, wherein a concentration of said polyester resin of polyethylenephthalate family containing carboxyalkoxybenzenesulfonic acid and its derivatives as a copolymerization ingredient is greater than or equal to 50 weight %.

21. (New) The solid electrolyte condenser according to claim 9, wherein:

a thickness of said separator is in a range of 20 to 100 μm ; and

a density of said separator is in a range of 0.30 to 0.70 g/cm^3 .